ASTR 100 Spring Semester 2022

Syllabus

"Life and Intelligence in the Universe"

1. Overview
ASTR100 is a 1-credit-hour seminar course originally intended for non-majors interested in exploring astronomy and astrophysics. All students from freshman to senior are welcome. The topic chosen for this semester is "Astrobiology: Life and Intelligence in the Universe." This is not a distribution course.

2. Instructor
Prof. Edison Liang
Office: Rm 342 Herman Brown Hall (HBH)
Office Hours: TuTh 12:30 pm – 2:30 pm, or by appointment
Telephone: x3524; email: liang@rice.edu

3. Class Website: canvas.rice.edu and http://spacibm.rice.edu/~liang/astr100
Please check canvas regularly for news, announcements and updates posted on the class website.

4. Class Time and Class Room
Class meets on Wednesday 2 pm – 2:50 pm. All meetings will be Fully Online via Zoom for the first two weeks. Zoom link will be provided on canvas. After January 24, 2022 the current plan is to have in-person meetings in HBH B21, subject to any change in University policy. Students who cannot make the Organization Meeting and Overview on Wed 1/12/22, but who still want to enroll in this class, should email instructor to make arrangements.

5. Class Format
This is a seminar course (one hour per week). Students are expected to do most of the talking using powerpoint presentations. After an introductory overview by the professor, students will take over the weekly classes by presenting summaries and commentary on each Chapter of the Textbook by Bennett & Shostak, plus related material from the web and other literature, followed by questions and answers from the audience. A round-table discussion of outstanding questions related to the chapter posed by the speaker will follow. All students should participate in the Q & A and round-table. Class participation is an important part of the grade and learning experience for this course. Students who miss class must provide instructor with a written notice and justifiable reasons.

6. Textbook
"Life in the Universe" by J. Bennett & S. Shostak
© 3rd Edition 2012 or latest edition, Addison-Wesley
This is an excellent (though rather non-mathematical) comprehensive discussion of

astrobiology, which will serve as the framework for topics covered in this class. Students will take turns to summarize and discuss each Chapter plus related material from the web and other literature. However, all students are expected to familiarize with, and participate in the discussions of, all chapters, including those chapters he/she is not presenting.

Other references:
"Intelligent Life in the Universe" by I. S. Shklovskii & C. Sagan © 1998 Emerson-Adams
"An Introduction to Astrobiology" edited by D.A. Rothery, I. Gilmour and M.A. Sephton 2003 edition Cambridge University Press
"Complete Course in Astrobiology" edited by G. Horneck & P. Rettberg 2007 edition Wiley-Vch, Germany

7. Grade
Class participation and attendance: 15%
Presentations: 45%
Final Term Paper (≥ 7-pages): 40%

8. Rice Honor Code
Students are expected to uphold the Rice Honor Code. Students are allowed to work together in preparations, but the final presentation and term paper must be his/her own work. All material downloaded from the web or taken from other sources must be acknowledged and given proper references.

9. Course Objectives
This is a course on the science of life and intelligence in the universe. While there will be plenty of speculation on many topics in astrobiology, the methodology should be based on hard science, established facts and logical reasoning. Students will be exposed to all fields of science relevant to life and intelligence on earth and beyond, including astronomy, physics, chemistry, biology, geology, climatology, planetary science, space exploration, information technology and philosophy. In addition, the powerpoint presentations and round table discussions should help students to develop skills in communication, public speaking and debate, and the term paper will train students in writing, literature search and critical thinking.

10. Learning Outcomes
Students will take turns presenting and summarizing the material of one Textbook chapter each week. All students will discuss in a round-table format the problems and questions posed by the speaker and/or the instructor. Through presentations and questions, students will improve their communication and public speaking skills. Through round-table discussions, students will develop skills in debate, group-interaction and logic. In addition to scientific facts and theories, students will learn about the scientific method, and become knowledgeable of major unsolved scientific problems and the latest advances in technology. The term paper will help students to improve their writing skills. Both the slide presentation and the term paper will train students on how to search the internet for and extract useful information, and discriminate between facts and hearsay.

11. Title IX Responsible Employee Notification

Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms of interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including myself, as the instructor/TA, are required by Title IX to disclose all incidents of non-consensua interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit safe.rice.edu or email titleixsupport@rice.edu.

12. Disability

Any student with a documented disability that requires accommodation should contact both the course instructor and Disability Support Services in the Allen Center.

13. Topic Sequence and Schedule

The topic sequence follows the Chapters in the textbook "Life in the Universe". Below is a tentative schedule based on 13 class weeks after the first week.

Week #	Topic	Text Chapter	Speaker
00	Organization & Overview	N/A	Professor
01	A Universe of Life	01	Student
02	Science of Life	02	Student
03	Universal Context of Life	03	Student
04	Habitability of Earth	04	Student
05	Nature of Life on Earth	05	Student
06	Origin and Evolution of Life on Earth	06	Student
07	Search for life in Solar System	07	Student
08	Mars	08	Student
09	Life on Jovian Moons	09	Student
10	Nature and Evolution of Habitability	10	Student
11	Exoplanets	11	Student
12	Extraterrestrial Intelligence	12	Student
13	Interstellar Travel & Fermi Paradox	13	Student